

What is claimed is:

1. A distortion compensator that compensates for distortion arising in an amplifier that amplifies a signal wherein:

the distortion compensator comprises:

signal level detection means that detects the level of the signal amplified by the amplifier;

distortion compensation execution means that executes distortion compensation with respect to the signal amplified by the amplifier by a mode of distortion compensation corresponding to the signal level detected by the signal level detection means based on a correspondence between signal levels and distortion compensation control values that determine the mode of distortion compensation;

distortion compensation control value correspondence update means that updates the correspondence between signal levels and distortion compensation control values used in the execution of distortion compensation by the distortion compensation execution means based on the signal amplified by the amplifier; and

distortion compensation control value correspondence updating mode parameter value control means that controls the values of stipulated parameters regarding the mode of updating by the distortion compensation control value correspondence update means.

2. A distortion compensator that compensates for distortion arising in an amplifier that amplifies a signal wherein:

the distortion compensator comprises:

signal level detection means that detects the level of the signal amplified by the amplifier;

distortion compensation execution means that executes distortion compensation with respect to the signal amplified by the amplifier by a mode of distortion compensation corresponding to the signal level detected by the signal level detection means based on a correspondence between signal levels and distortion compensation control values that determines the mode of distortion compensation;

distortion compensation control value correspondence update means that

updates the correspondence between signal levels and distortion compensation control values used in the execution of distortion compensation by the distortion compensation execution means based on the signal amplified by the amplifier; and

distortion compensation control value number control means that controls the number of pairs of corresponding signal levels and distortion compensation control values in the correspondence between signal levels and distortion compensation control values updated by the distortion compensation control value correspondence update means.

3. A distortion compensator according to claim 2, wherein:

the distortion compensation control value number control means increases the number of pairs of corresponding signal levels and distortion compensation control values in the correspondence between signal levels and distortion compensation control values updated by the distortion compensation control value correspondence update means together with a decrease in the distortion components generated in the amplifier contained in the signal amplified by the amplifier, and also decreases the number of pairs of corresponding signal levels and distortion compensation control values in the correspondence between signal levels and distortion compensation control values updated by the distortion compensation control value correspondence update means together with an increase in the distortion components generated in the amplifier contained in the signal amplified by the amplifier.

4. A distortion compensator according to claim 2, wherein:

the distortion compensation control value number control means has an elapsed time measurement means that measures the elapsed time in the processing of the signal subject to amplification by the amplifier, and increases the number of pairs of corresponding signal levels and distortion compensation control values in the correspondence between signal levels and distortion compensation control values updated by the distortion compensation control value correspondence update means together with an increase in the elapsed time measured by the elapsed time measurement means.

5. A distortion compensator according to claim 3, wherein:

the distortion compensation control value number control means controls the number of pairs of corresponding signal levels and distortion compensation control values in the correspondence between signal levels and distortion compensation control values updated by the distortion compensation control value correspondence update means based on a correspondence between the number of distortion compensation control values and stipulated conditions to a number of distortion compensation control values that corresponds to the conditions.

6. A distortion compensator according to claim 4, wherein:

the distortion compensation control value number control means controls the number of pairs of corresponding signal levels and distortion compensation control values in the correspondence between signal levels and distortion compensation control values updated by the distortion compensation control value correspondence update means based on a correspondence between the number of distortion compensation control values and stipulated conditions to a number of distortion compensation control values that corresponds to the conditions.

7. A distortion compensator according to claim 2, wherein:

the distortion compensation execution means has a distortion compensation control value interpolation means that performs interpolation based on a plurality of pairs of corresponding signal levels and distortion compensation control values in the correspondence between signal levels and distortion compensation control values, thereby determining the mode of distortion compensation corresponding to the signal level detected by the signal level detection means.

8. A distortion compensator that compensates for distortion arising in an amplifier that amplifies a signal wherein:

the distortion compensator comprises:

signal level detection means that detects the level of the signal amplified by the amplifier;

distortion compensation execution means that executes distortion compensation with respect to the signal amplified by the amplifier by a mode of distortion

compensation corresponding to the signal level detected by the signal level detection means based on a correspondence between signal levels and distortion compensation control values that determines the mode of distortion compensation;

distortion compensation control value correspondence update means that
5 updates the correspondence between signal levels and distortion compensation control values used in the execution of distortion compensation by the distortion compensation execution means based on the signal amplified by the amplifier; and

update amount control means that controls the amount by which the
correspondence between signal levels and distortion compensation control values is
10 updated by the distortion compensation control value correspondence update means.

9. A distortion compensator according to claim 8, wherein:

the update amount control means decreases the amount by which the
correspondence between signal levels and distortion compensation control values is
15 updated by the distortion compensation control value correspondence update means together with a decrease in the distortion components generated in the amplifier contained in the signal amplified by the amplifier, and also increases the amount by which the correspondence between signal levels and distortion compensation control values is updated by the distortion compensation control value correspondence update
20 means together with an increase in the distortion components generated in the amplifier contained in the signal amplified by the amplifier.

10. A distortion compensator according to claim 8, wherein:

the update amount control means has an elapsed time measurement means that
25 measures the elapsed time in the processing of the signal subject to amplification by the amplifier, and increases the amount by which the correspondence between signal levels and distortion compensation control values is updated by the distortion compensation control value correspondence update means together with an increase in the elapsed time measured by the elapsed time measurement means.

11. A distortion compensator according to claim 9, wherein:

update amount control means controls the amount by which the correspondence

between signal levels and distortion compensation control values is updated by the distortion compensation control value correspondence update means based on a correspondence between the update amount and stipulated conditions to an update amount that corresponds to the conditions.

5

12. A distortion compensator according to claim 10, wherein:

update amount control means controls the amount by which the correspondence between signal levels and distortion compensation control values is updated by the distortion compensation control value correspondence update means based on a
10 correspondence between the update amount and stipulated conditions to an update amount that corresponds to the conditions.

13. A distortion compensator according to claim 8, wherein:

the distortion compensation execution means has a distortion compensation
15 control value interpolation means that performs interpolation based on a plurality of pairs of corresponding signal levels and distortion compensation control values in the correspondence between signal levels and distortion compensation control values, thereby determining the mode of distortion compensation corresponding to the signal level detected by the signal level detection means.

20

14. A distortion compensator that compensates for distortion arising in an amplifier that amplifies a signal wherein:

the distortion compensator comprises:

signal level detection means that detects the level of the signal amplified by the
25 amplifier;

distortion compensation execution means that executes distortion compensation with respect to the signal amplified by the amplifier by a mode of distortion compensation corresponding to the signal level detected by the signal level detection means based on a correspondence between signal levels and distortion compensation
30 control values that determines the mode of distortion compensation;

distortion compensation control value correspondence update means that updates the correspondence between signal levels and distortion compensation control

values used in the execution of distortion compensation by the distortion compensation execution means based on the signal amplified by the amplifier; and

update frequency control means that controls the frequency at which the correspondence between signal levels and distortion compensation control values is updated by the distortion compensation control value correspondence update means.

15. A distortion compensator according to claim 14, wherein:

the update frequency control means decreases the frequency at which the correspondence between signal levels and distortion compensation control values is updated by the distortion compensation control value correspondence update means together with a decrease in the distortion components generated in the amplifier contained in the signal amplified by the amplifier, and also increases the frequency at which the correspondence between signal levels and distortion compensation control values is updated by the distortion compensation control value correspondence update means together with an increase in the distortion components generated in the amplifier contained in the signal amplified by the amplifier.

16. A distortion compensator according to claim 14, wherein:

the update frequency control means has an elapsed time measurement means that measures the elapsed time in the processing of the signal subject to amplification by the amplifier, and decreases the frequency at which the correspondence between signal levels and distortion compensation control values is updated by the distortion compensation control value correspondence update means together with an increase in the elapsed time measured by the elapsed time measurement means.

17. A distortion compensator according to claim 15, wherein:

update frequency control means controls the frequency at which the correspondence between signal levels and distortion compensation control values is updated by the distortion compensation control value correspondence update means based on a correspondence between the update frequency and stipulated conditions to an update frequency that corresponds to the conditions.

18. A distortion compensator according to claim 16, wherein:

update frequency control means controls the frequency at which the
correspondence between signal levels and distortion compensation control values is
updated by the distortion compensation control value correspondence update means
5 based on a correspondence between the update frequency and stipulated conditions to an
update frequency that corresponds to the conditions.

19. A distortion compensator according to claim 14, wherein:

the distortion compensation execution means has a distortion compensation
10 control value interpolation means that performs interpolation based on a plurality of
pairs of corresponding signal levels and distortion compensation control values in the
correspondence between signal levels and distortion compensation control values,
thereby determining the mode of distortion compensation corresponding to the signal
level detected by the signal level detection means.

15